



Emergency personnel from the Cambridge Fire Department and MIT respond to a hexane spill in Building 18 Tuesday afternoon.

Chemical spill reveals some flaws in MIT Alert

Vague emergency notifications sent out

By Rohan Banerjee
STAFF REPORTER

On Tuesday afternoon, a chemical spill in the Dreyfus Building (18) prompted the evacuation of the building and exposed problems in the campus-wide emergency communication process.

According to Richard J. Wilk, Administrative Officer for the Department of Chemistry, a four-liter glass bottle of liquid hexane, which has a high evaporation rate at room temperature, was spilled on the third floor of the Dreyfus Building. “The spill occurred while the bottle was being moved from a shipping container into a storage cabinet near the entrance to a room which is adjacent to a public corridor,” said Wilk in an email to *The Tech*.

Wilk said that there were no injuries and that the spill was contained to the area

around the broken bottle. “Members of the Department of Chemistry followed MIT Environmental Health and Safety (EHS) procedures for the reporting and cleanup of a chemical spill,” said Wilk.

In an email to *The Tech*, Executive Vice President and Treasurer Israel Ruiz stated that the emergency response was as timely and effective as it had been for earlier campus emergencies. According to Ruiz, lab personnel notified the MIT Police of the chemical spill at 1:30 p.m., who then directed the personnel to pull the fire alarm and evacuate the building.

“The Cambridge Fire Department responded and was updated en route by MIT Police on the nature of emergency. MIT EHS responded to assist the Fire Department and to coordinate the clean up

Chemical spill, Page 11

Maseeh still forgoing DormCon membership

But reps to start attending meetings again

By Ray Wang
STAFF REPORTER

Representatives from Maseeh appeared at a recent Dormitory Council (DormCon) meeting for the first time since Maseeh seceded from the council in 2013, but Maseeh executives claim that they are not actively seeking to rejoin.

DormCon, MIT’s governing body for undergraduate residences, serves as an advocacy group as well as a pool of resources for campus-wide events such as Baker’s Piano Drop and Campus Preview Weekend. The presidents of each dorm serve as the organization’s voting members.

Maseeh Vice President Sydney E. Hodges ’15, who was present at the DormCon meeting, sought only to fa-

miliarize herself with DormCon and what Maseeh could gain from it. “It was more of an educational experience rather than a ‘We’re really thinking about rejoining,’” she said.

The Maseeh Hall Executive Council (MHEC) currently has no timeline for initiating a large movement to rejoin DormCon. Maseeh president Austin D. Fathman ’14 pointed out that, with elections for Maseeh’s student government coming up in November, the decision will be passed on to the next administration. The process itself, however, would be fairly simple — only a majority vote is needed within DormCon for Maseeh to regain standing.

Maseeh seceded from DormCon in the spring of 2013 citing “budget-related

Maseeh, Page 11



JESSICA L. WASS—THE TECH

EECS undergraduates work in the new EECS Undergraduate Student Lounge on Tuesday. The lounge, located on the first floor of Building 36, opened at the beginning of October and includes rooms for individual study, networking, and conferences.

Murder charges against MIT alum dropped

Prosecutors dropped a murder charge against former Media Lab employee Geoffrey V. Wilson ’02 on Sept. 18. Wilson, who had been free on bail, was accused of shaking his baby to death in 2010.

According to *The Boston Globe*, the state medical examiner and prosecutors obtained new information about the family’s medical history. Wilson’s lawyer stated in August that both the baby’s mother and grandmother had a rare genetic condition that made them susceptible to blood vessel ruptures as a result of weakness in collagen. The name of the condition was undisclosed.

After review of genetic tests and medical records, the medical examiner’s office changed the baby’s cause of death to “could not be determined,” and the charges against Wilson were dropped.

—Amy Wang

HackMIT, Hacking Arts, and first MIT Maker Faire hosted on campus

This past weekend, several MIT groups hosted engineering and hackathon events on campus. While HackMIT and Hacking Arts were returning annual events, this year marked the first appearance of MIT’s Maker Faire. Although independent from one another, the gatherings were all centered around building and sharing technical projects.

HackMIT ran from Oct. 4 to 5 and saw hundreds of students convene in the Johnson Ice Rink to participate in the 24-hour hackathon. Students came from around the country to build both software and hardware projects to compete for over \$10,000 in prizes.

Sponsors included companies like Google, Facebook, and Fitbit, which provided their own prizes and hosted workshops throughout the weekend in order to promote

Hackathons, Page 9

IN SHORT

There is no class this Monday! Happy Columbus Day!

Take Back the Night will occur today at 7 p.m. on the steps of the Student Center. Stories submitted by sexual assault survivors will be read as part of Domestic Violence Awareness Month.

Quarter 2 PE Registration is now open for undergrads until 1 p.m. on Wednesday. Grad student registration opens on Tuesday at 8 a.m.

Grad students — only four more chances to place your orders for your Grad-Rat for delivery on Decem-

ber 1. Ring orders can be placed this Tuesday through Thursday in the E62 lobby from 11:30 a.m. to 4:30 p.m. and next Sunday from 12—1 p.m. at the Ashdown brunch. The first 200 people to order get a \$25 discount.

Nominations for the 2015 Collier Medal are now open. Submit a nomination for a student, faculty member, or group whose actions demonstrate the importance of community at <http://hrweb.mit.edu/rewards/excellence>. The form closes on Monday, Oct. 20.

Send news information and tips to news@tech.mit.edu.

SUPREME SILENCE

Where was the support for personal freedoms during the Hobby Lobby case this summer? **OPINION, p. 4**

MIND DUMP

Literally. **FUN, p. 8**

HIGH TECH SPY GEAR IS NICE BUT...

What about the free food? **FUN, p. 8**



LET'S START WITH SOMETHING SIMPLE

Design software is not as simple as some make it seem. **FUN, p. 8**

FLYING HIGH

Acrobats perform high-brow physical comedy in Traces. **ARTS, p. 12**

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By Claire Lazar

Such gracious restraint from interference, however, was not exercised this summer in a different high-profile case. In late June, the Supreme Court addressed whether certain companies should be exempt from a federal requirement to cover contraceptives in their health plans. The Court ruled in favor of the arts and crafts chain Hobby Lobby, along with other “closely held” corporations, declaring that they may be exempt from the contraceptive mandate if they have religious objections. Consequently, when a woman steps into a pharmacy, she may be limited in what products her insurance covers due to her employer’s faith. Even if this image seems esoteric, it serves as a reminder of the decision’s potential ramifications.

A notable controversy associated with *Burwell v. Hobby Lobby* is that a corporation is now treated as though it is a person with religious rights. Yet a corporation is not a person — and if it were, who would it be? The owners, managers, and employees all take on the roles of gears in a whole system, and each has his or her own constitutional rights that should be equally protected. Regardless of their roles, the legal system is broadly expected to prevent rather than support one person's beliefs from directing the private life of another, and due to the decision, the religious preferences of the firm can now supersede



Letters, columns, and cartoons must bear the authors' signatures, addresses, and phone numbers. Unsigned letters will not be accepted. *The Tech* reserves the right to edit or condense letters; shorter letters will be given higher priority.

Justice Kennedy directly addressed this issue, writing, "This decision concerns only the contraceptive mandate and should not be understood to hold that all insurance-coverage mandates, e.g., for vaccinations or blood transfusions, must necessarily fall if they conflict with an employer's religious belief." One might then wonder about non-medical religious convictions of business owners. For instance, there may be some who object to

Claire Lazar is a member of the Class of 2017.

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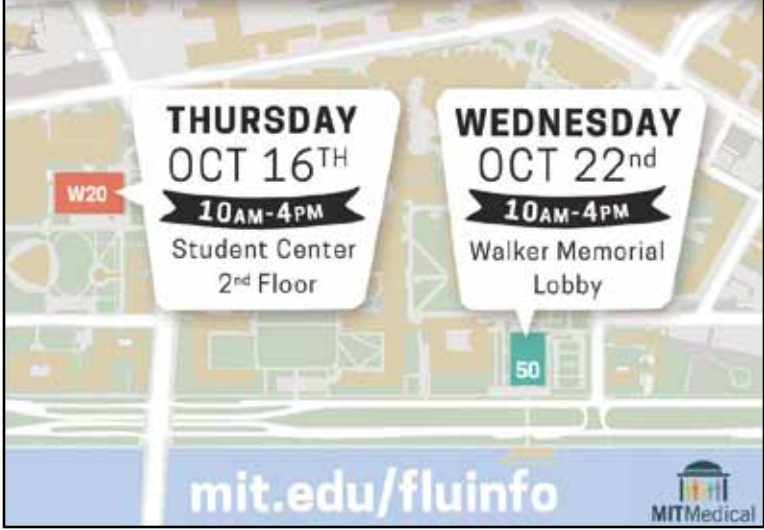


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MIT Medical

Engineers defeated by Brandeis at home




ALEXANDER C. BOST—THE TECH

Gregory F. Hui '18 moves the ball past a defender during MIT's 1-0 loss against Brandeis University on Tuesday night. The Engineers kept the game close, but a goal early in the second half was enough of an edge for an undefeated Brandeis as they improved to 11-0 and MIT fell to 4-3-4.

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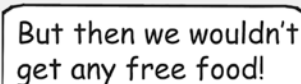
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BY ERIKA TRENT



by Letitia Li



by Steve Sullivan



Institute welcomes coders and makers

Maker Faire, Hacking Arts, and HackMIT attract many attendees

Hackathons, from Page 1

their technologies.

At the MIT Media Lab, the Sloan Entertainment and Media Club held its second Hacking Arts festival in which it promoted the intersection of arts, technology, and entrepreneurship.

From Oct. 3 to 5, participants attended panels on topics ranging from fashion to virtual reality and worked on projects as part of the festival's hackathon. The event also included an art exhibit and a live performance from Grammy-nominated artist Ryan Leslie.

On Saturday, Oct. 4, the first MIT Mini Maker Faire took place,

attracting close to 3,000 attendees. Held at MIT's North Court near Stata Center, the public event featured the creations of over 100 MIT and local makers in everything from jewelry and sculptures to robots and 3D printers. Other activities included go-kart tournaments and tours of MIT maker spaces.

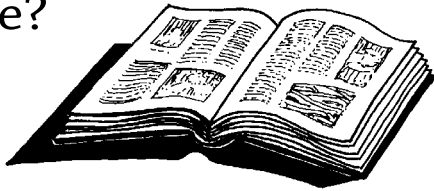
"Children of all ages, from 5 to 55, were learning, engaging, and sharing," said Jessica A. Artilles '12, one of the organizers. Although this is MIT's first year hosting a Maker Faire, the event is part of a global maker faire series established by editors at MAKE magazine.

—Drew Bent

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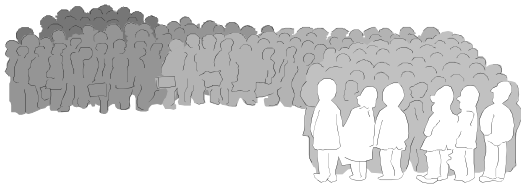
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There will be an opportunity to ask questions directly to our panelists!

This space donated by *The Tech*

Solution to Sassy Sudoku
from page 5

5	4	2	1	9	6	3	8	7
6	1	9	7	3	8	2	4	5
8	3	7	5	4	2	6	1	9
1	7	8	3	5	9	4	6	2
4	5	6	2	8	1	9	7	3
2	9	3	6	7	4	1	5	8
3	2	4	8	1	5	7	9	6
9	6	5	4	2	7	8	3	1
7	8	1	9	6	3	5	2	4

Solution to Tranquil Techdoku
from page 5

3	2	4	1	5	6
2	1	3	6	4	5
5	4	6	3	1	2
6	5	1	4	2	3
4	3	5	2	6	1
1	6	2	5	3	4

Solution to Silly Sudoku
from page 5

1	6	3	2	7	9	8	5	4
9	4	7	5	1	8	6	3	2
5	2	8	6	3	4	9	7	1
6	8	9	4	5	1	3	2	7
2	7	5	3	8	6	1	4	9
4	3	1	9	2	7	5	8	6
3	9	6	8	4	2	7	1	5
7	5	4	1	6	3	2	9	8
8	1	2	7	9	5	4	6	3

Solution to Trivial Techdoku
from page 5

3	2	4	1	6	5
1	6	2	5	4	3
2	1	3	6	5	4
5	4	6	3	2	1
6	5	1	4	3	2
4	3	5	2	1	6

Solution to Crossword
from page 5

C	R	A	M	S	W	E	L	D	W	E	S	T
H	A	V	O	C	A	L	O	E	H	A	H	A
A	R	I	S	E	S	O	D	A	I	T	A	L
R	E	D	S	N	A	P	P	E	R	T	E	L
					E	L	S	E	E	V	E	N
W	I	N	G	I			B	R	E	W		
A	M	E	R		A	C	M	E	T	H	E	F
V	I	S	E		R	E	A	L	M	A	X	L
E	N	T	E	R		O	N	T	O	L	I	E
					N	A	G	S		D	I	E
T	O	M	A	T	O		T	H	E	N		
A	W	O	L		B	L	U	E	M	A	R	L
S	N	U	G		L	A	L	A		J	U	I
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E	T	T	E		T	A	P	S		M	E	S



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Better microscopy earns chemistry prize

Chemistry Nobel Prize awarded to two Americans and one German

By Kenneth Chang
THE NEW YORK TIMES

Three scientists, two American and one German, received this year’s Nobel Prize in Chemistry for circumventing a basic law of physics and enabling microscopes to peer at the tiniest structures within living cells.

The 2014 laureates, announced Wednesday by the Royal Swedish Academy of Sciences, are Eric Betzig, 54, of the Howard Hughes Medical Institute in Virginia; Stefan W. Hell, 51, of the Max Planck Institute for Biophysical Chemistry in Germany; and William E. Moerner, 61, of Stanford University in California.

For centuries, optical microscopes — those that magnify ordinary visible light — have allowed biologists to study organisms too small to be seen with the naked eye. But a fundamental law of optics known as the diffraction limit, first described in 1873, states that the resolution can never be better than half the wavelength of light being looked at.

For visible light, that limit is about 0.2 millionths of a meter, or one-127,000th of an inch. A human hair is 500 times as wide.

But a bacterium is not much larger than the size of the diffraction limit, and there was little hope of seeing details within the cell like the interaction of individual proteins.

Other technology like the electron microscope, which generates images from beams of electrons instead of particles of light, achieves higher resolution, but it has other limitations, like requiring the sample to be sliced thin and placed in a vacuum.

For biological research, that generally meant the subject of study had to be dead.

At first glance, circumventing the diffraction limit would seem a foolish pursuit, like trying to invent a perpetual motion machine or faster-than-light travel — doomed by fundamental limits on how the universe works.

Nonetheless, Hell, who was born in Romania, started working on the problem after finishing his doctorate at the University of Heidelberg in 1990. After failing to find financing in Germany to pursue his ideas, he obtained a research position at the University of Turku in Finland in 1993. A year later, he published his theoretical proposal for achieving sharper microscopic pictures.

Hell could not break the laws of physics, of course. But he realized they could work around the diffraction limit by lighting up some of the molecules.

Biologists were already using a technique called fluorescence microscopy — attaching glowing molecules to proteins or DNA and then following the movement of the glows, like watching the ebb and flow of city traffic at night via the streams of headlights. But that did not solve the diffraction limit. If fluorescent molecules came close to one another, all the biologists could see was one glowing blur.

Hell’s insight was that by using lasers, he could restrict the glow to a very small section. That way, for structures smaller than the diffraction limit, “You can tell them apart just by making sure that one of them is off when the other is on,” he said in an interview.

Other scientists could have just taken his proposal and made it

work in the laboratory long before he did, he said, adding: “I was a sort of nobody in those days. I didn’t even have a lab, really. People could have taken it as a recipe, could have done it. But they didn’t do it. Why didn’t they do it? Because they thought it wouldn’t work that way.”

In 1997, he moved to the Max Planck Institute for Biophysical Chemistry, and in 1999, he successfully put his idea into practice, producing a clearer image of an E. coli bacterium. Hell said the top scientific journals, Science and Nature, rejected the paper before it was published in The Proceedings of the National Academy of Sciences.

About the same time, Moerner, then at the University of California, San Diego, was working with a green fluorescent protein that had first been found in a glowing jellyfish, an advance that brought three researchers the Nobel Prize in Chemistry in 2008. Moerner found a version of the protein that he could turn on or off by shining specific colors of light on it.

That advance proved crucial for Betzig, who in 1995 had published an idea for using fluorescent molecules of different colors to get around the diffraction limit. But Betzig, then a researcher at Bell Laboratories in New Jersey, was frustrated with the academic life. He quit Bell and joined his father’s machine tool company.

Years later, as he grew restless again and thought about returning to science, Betzig came across the green fluorescent protein. “And then it would become clear” how to put in effect his 1995 idea, he said.

Instead of using fluorescence of different colors, he could switch on a few of the molecules at a time. By

combining separate images, Betzig was able to produce a sharper view.

The three laureates have employed their innovations to study biology at the smallest scales. Hell has studied how brain synapses work, Moerner has looked at proteins related to Huntington’s disease, and Betzig has tracked cell division inside embryos.

“Biology has turned into chemistry,” said Sven Lidin, the chairman of the Nobel Committee for Chemistry and a professor of inorganic chemistry at Lund University. “Chemistry has turned into biology.” (By training, all three laureates are physicists.)

The three scientists will share a prize of \$1.1 million, to be awarded Dec. 10 in Stockholm.

Betzig said he had learned the news in a phone call in Munich, where he was attending a conference. He said his reaction was “I guess elation and fear — the fear being that my life is busy enough and happy enough, and it doesn’t need to be perturbed too much.”

The committee was not able to reach Moerner before making the announcement.

“I actually still haven’t a chance to talk to them,” Moerner said Wednesday morning from a hotel room in Brazil, where he is attending a scientific workshop. He said his wife called to tell him the news.

Hell said that when he received the phone call, he wondered if it might be a hoax. Then he recognized the voice of the caller, Stefan Normark, the permanent secretary of the academy. Another voice told him to stay on the line so that he could take questions from journalists.

“And then I realized, this is serious,” he said.

Distinguish Yourself

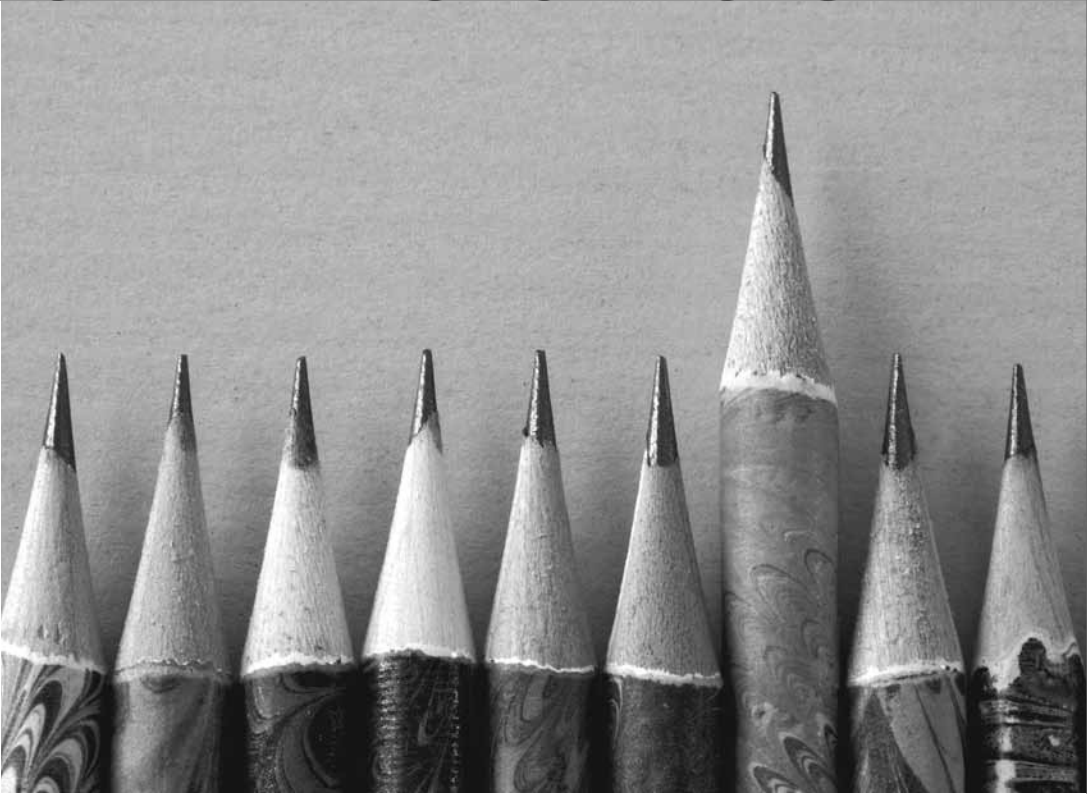
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Hexane spill reveals flaws of MIT alerts

DiFava: must be more accurate

Chemical spill, from Page 1

activities. The building was cleared for occupancy after a little over an hour,” said Ruiz.

However, Ruiz said that the process of notifying the community about the incident, including vague and ominous messages, was unsatisfactory. This view was echoed by Chief of Police John DiFava in an interview with *The Tech*.

“We had a problem with the alert system, no question about it. We failed to get a message out there that was purposeful,” he said.

The MIT Alert system is designed to notify students by text, email, and voicemail.

The unclear MIT Alert notifications stemmed from the failure of the “bridge line” communication system, according to DiFava. The “bridge line” is a conference call system designed to facilitate communication between campus representatives from the MIT Police, EHS, the MIT Security and Emergency Management Office (SEMO), and the MIT News Office in order to decide upon the nature of the emergency alert.

Ruiz said that SEMO received notification of the fire alarm from the Dreyfus Building and then unsuccessfully attempted to set up the bridge line twice.

After this communications failure, the MIT Department of Facilities Operations Center sent a general “flare message” through MIT Alert to the entire campus, according to planned protocol, at around 1:45 p.m. The text of the alert read: “MIT is investigating report of a serious emergency on Campus. Emergency personnel are responding. STAY ALERT.”

The “flare message” system was introduced in the aftermath of an April 2013 gunman hoax incident to quickly alert the MIT community about serious campus emergencies that threatened general safety. According to Ruiz, it was not intended to be used for incidents such as the chemical spill. DiFava added, “In-

stead of mitigating the concern of the public, I think we enhanced it. The information that came out was nebulous and there was no location or specific type of situation.”

Valentina De La Rosa ’17 also felt that the lack of information in the alerts overly worried people. In an email to *The Tech*, she said, “I have a friend whose mother heard about the spill and called her. She said her mother sounded very worried about the situation. MIT made the spill seem a lot worse than it actually was.”

Ten minutes after the release of the flare message, MIT Alert sent out a second notification stating that there was a hazardous materials emergency, but the specific location of the emergency was not stated. A third notification included the building number of the Dreyfus Building.

The MIT Alert system is designed to notify students by text, email, and voicemail about public health or life safety emergencies, according to the MIT Alert website. In order to receive these alerts, students must sign up for the service on the website by providing their contact information.

The MIT Police Twitter account also rebroadcast the alerts, and detailed updates were posted on the MIT Emergency Information website. DiFava said that using these channels of communication are currently the only way that the system can get enough information out to enough people in the right manner.

Looking ahead, DiFava stated that the overall process needs to be streamlined to ensure that a timely and accurate message is sent out to campus. “We still need the conference bridge to manage the situation and decide where we’re going to go with it, but for the first few minutes we need to take it out of the situation,” said DiFava.

Ruiz said that MIT is already taking steps to improve the emergency notification protocol, and that the incident served as a useful test of the campus alert capability and response time.

“Clearly, much more work and some key changes need to happen and will be happening soon,” Ruiz said.

Maseeh’s DormCon secession still holds

Dorm still to send reps to meetings

Maseeh, from Page 1

and representation concerns,” according to a *Tech* article written at the time. Fathman, who was a voting member at large in the 4-3 decision and voted in favor of secession, said he has not changed his stance. “We want to be a part of the rest of the dorms and have support and give support; however, there’s two sides to DormCon — there’s the advocacy, and then there’s the large event funding, and that’s the side we didn’t feel was apportioned correctly.”

DormCon collects a tax of five dollars per student per semester, which means that Maseeh, with almost 500 residents, would be paying nearly \$10,000 a year to DormCon — a third of their budget. Only a fraction of Maseeh’s dues returned to the dorm in the form of event funding from DormCon during its membership. Fathman said, “One year, we got... \$2,000 back.”

According to the DormCon meeting minutes, members said that DormCon provides benefits for each residence because of its powerful position as a voice for all dorms. In addition, they underscored that DormCon members can receive connections to administrators and advance warning of things going on in other dorms, among other benefits. However, members also mentioned that it makes it hard for DormCon to coordinate without the representation of Maseeh.

Until Maseeh’s secession, former MIT dorm Bexley had been the only dorm to not to participate in Dormcon.

Maseeh will continue to send representatives to the biweekly meetings, breaking a one-and-a-half year long hiatus. Hodges said that their current plan is to “join our voice with theirs without the more financial obligations.”

“Right now, we’re very content,” she added.

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In my dreams sometimes I fly. I just take a really long step and then the next without my feet ever touching the ground. It is a peculiar yet precious feeling. The Quebecois troupe Les 7 Doigts de la Main (literally, the seven fingers of a hand), makes the dream a reality in their theater, dance, and circus crossover *Traces*, running in the Cutler Majestic Theatre in Boston's Theatre District until October 12.

Saturday night's performance was a "flawless victory" as described by the actors.

Saturday night's performance was a "flawless victory," as described by the actors during the following Q&A (Friday and Saturday evenings). While such success does

Don't get me wrong, there are still many layers of depth to the production. The powerful teeterboarder Fletcher Sanchez also gave a quick-paced speech on the topic of time that could be described as Google Search meets stand-up comedy. The audience was also given an opportunity choose their favorite acrobat, as the character's



Traces is probably the most life-positive play I have seen. And after the Add Date exam period with the Boston weather slowly becoming, well, Boston weather, this was exactly what the doctor should have ordered.

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